

**ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER (“NASA ARC”)
AND
VIRGIN ORBIT, LLC (“VO”)
UNDER SPACE ACT UMBRELLA AGREEMENT No. 33082/SAA2-403586
FOR
ANALYSIS AND SIMULATION OF A TRANSPORT AIRCRAFT AS A LAUNCH
PLATFORM
(ANNEX NUMBER ONE)**

ARTICLE 1. PURPOSE

This Annex shall be for the purpose supporting the aircraft handling qualities research and analysis of VO using the high fidelity B747-400 Flight Simulator located at the Crew Vehicle Systems Research Facility (CVSRF) at NASA ARC. The simulator tasks performed will include carrier aircraft dynamics in the configuration of VO's LauncherOne through various phases of flight using the CVSRF simulation laboratory, and access to subject matter experts to help support VO's readiness to use the carrier aircraft for an air launch platform. Each capitalized term used in this Annex One, but not defined herein, shall have the meaning ascribed to it in the Umbrella Agreement.

The legal authority for this Annex, consistent with the Umbrella Agreement, is in accordance with the National Aeronautics and Space Act (51 U.S.C. § 20113(e)).

ARTICLE 2. RESPONSIBILITIES

A. NASA ARC will use reasonable efforts to:

1. Provide use of its B747-400 Flight Simulator at its CVSRF in accordance with an approved Final Test Plan developed by Partner.
2. Support the development, testing, and operations of the B747-400 Flight Simulator for the study. Development may include items such as changes to aero data, or flight scenarios.
3. Review the Final Test Plan for approval within 7 business days after receipt from Partner.
4. Provide test results data from the B747-400 Flight Simulator in accordance with the Final Test Plan. Partner shall have no access to any third party proprietary or trade secret data regarding simulator performance.

B. Partner will use reasonable efforts to:

1. Submit the Final Test Plan or similar document to NASA ARC no later than fifteen (15) days prior to the simulation start date (unless NASA ARC agrees to a shorter period

of time.) Simulation operations will commence only after the Final Test Plan is reviewed and approved by NASA ARC.

2. Provide appropriate research staff and pilot subjects on-site at NASA ARC to conduct and monitor the flight simulation study in the B747-400 Flight Simulator.

3. Provide the necessary aircraft data to NASA ARC SimLabs to meet the simulation requirements and Final Test Plan.

4. Comply with NASA facility regulations, policies and guidelines while on NASA ARC premises, including, but not limited to, safety, environmental and security standards, as well as all relevant rules concerning simulator flight operation and safety.

ARTICLE 3. SCHEDULE AND MILESTONES

The planned major milestones for the activities for this Annex defined in the "Responsibilities" Article are as follows:

<u>Milestone</u>	<u>Estimated Completion Date</u>
First flight period (Both Parties)	October 2020- 3 days (8hrs/day) of simulation.
Second flight period (Both Parties)	November 2020- 3 days (8hrs/day) of simulation.
Third flight period (Both Parties)	December 2020- 3 days (8hrs/day) of simulation.
Fourth flight period (Both Parties)	January 2021- 3 days (8hrs/day) of simulation.
Fifth flight period (Both Parties)	February 2021- 3 days (8hrs/day) of simulation.
Sixth flight through twelfth periods (Both Parties)	Monthly from March to September 2021 - 3 days (8hrs/day) of simulation.

ARTICLE 4. FINANCIAL OBLIGATIONS

A. Partner agrees to reimburse NASA an estimated cost of \$427,452 for NASA to carry out its responsibilities under this Annex.

Each payment shall be marked with "ARC (SAA2-403586-Annex One)."

Partner shall reimburse NASA in accordance with the following payment schedule:

<u>Description</u>	<u>Amount of Payment</u>	<u>Schedule</u>
Payment #1	\$213,726.00	Upon Execution of Agreement
Payment #2	\$213,726.00	Due 6 months from Execution of Agreement or when payment #1 is fully expended, whichever occurs earlier

B. NASA will not provide services or incur costs beyond the current funding. Although NASA has made a good faith effort to accurately estimate its costs, it is understood that NASA provides no assurance that the proposed effort under this Annex will be accomplished for the estimated amount. Should the effort cost more than the estimate, Partner will be advised by NASA as soon as possible. Partner shall pay all costs incurred and have the option of canceling the remaining effort, or providing additional funding in

order to continue the proposed effort under the revised estimate. Should this Annex be terminated, or the effort completed at a cost less than the agreed-to estimated cost, NASA shall account for any unspent funds within one year after completion of all effort under this Annex, and promptly thereafter, at Partner's option return any unspent funds to Partner or apply any such unspent funds to other activities under the Umbrella Agreement. Return of unspent funds will be processed via Electronic Funds Transfer (EFT) in accordance with 31 C.F.R. Part 208 and, upon request by NASA, Partner agrees to complete the Automated Clearing House (ACH) Vendor/Miscellaneous Payment Enrollment Form (SF 3881).

ARTICLE 5. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

A. Data produced under this Annex which is subject to paragraph C. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement will be protected for the period of two years.

B. Under paragraph H. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement, Disclosing Party provides the following Data to Receiving Party. The lists below may not be comprehensive, are subject to change, and do not supersede any restrictive notice on the Data provided.

1. Background Data:

The Disclosing Party's Background Data, if any, will be identified in a separate document.

2. Third Party Proprietary Data:

The Disclosing Party's Third Party Proprietary Data, if any, will be identified in a separate document.

3. Controlled Government Data:

The Disclosing Party's Controlled Government Data, if any, will be identified in a separate document.

4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement:

None.

ARTICLE 6. TERM OF ANNEX

This Annex becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or one year from the Effective Date, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not

exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

ARTICLE 7. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Annex by providing thirty (30) calendar days written notice to the other Party.

ARTICLE 8. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Annex.

Management Points of Contact

NASA Ames Research Center
Matt Holtrust
Agreement Manager
Mail Stop: 202A-3
Moffett Field, CA 94035
Phone: 650-604-4069
matthew.j.holtrust@nasa.gov

Virgin Orbit, LLC
Justin Holliday
Contracts Administrator
4022 E. Conant Street
Long Beach, CA 90808
Phone: 562.708.7222
justin.holliday@virginorbit.com

Technical Points of Contact

NASA Ames Research Center
Steven D. Beard
Chief, Code AFS
Building N243, Room 106
Moffett Field, CA 94035-1000
Phone: (650) 604-0036
steven.d.beard@nasa.gov

Virgin Orbit, LLC
Kelly Latimer
Pilot, Flight Ops
4022 E. Conant Street
Long Beach, CA 90808
Phone: 714.501.6953
kelly.latimer@virgingalactic.com

ARTICLE 9. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Modification of an Annex does not modify the terms of the Umbrella Agreement.

ARTICLE 10. SIGNATORY AUTHORITY

The signatories to this Annex covenant and warrant that they have authority to execute this Annex. By signing below, the undersigned agrees to the above terms and conditions.

**NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
AMES RESEARCH CENTER**

BY: _____
Eugene L. Tu
Center Director

DATE: _____

VIRGIN ORBIT, LLC

BY:  *Brita O'Rear* _____
Brita O'Rear
Vice President & Chief Financial
Officer

DATE: 10/06/2020 _____